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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,051	12/14/2001	Shinichi Fujii	15162/04200	4486

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EXAMINER	
TRAN, NHAN T	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,051	FUJII ET AL.	
	Examiner	Art Unit	
	Nhan T. Tran	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 December 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 December 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 12/14/2001 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 22, 24-28, 30-31, 33-35, 37-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishii et al (US 5,225,940).

Regarding claim 30, Ishii discloses an apparatus (Fig. 1) for controlling an optical system (taking lens 1) at the time of capturing an image as digital data (through A/D converter 3), comprising:

a detector (edge detection 5; Figs. 1 & 2) for detecting edges in an image (col. 4, lines 25-38);

a calculator (combined circuits 5-11; Figs. 1 & 2) for calculating an evaluation value indicative of the degree of achieving focus from edges each having an edge width which is equal to or larger than a predetermined value (threshold value THR 2, step #43 in Fig. 11); and a controller (micro-computer 8) for driving said optical system on the basis of said evaluation value (step #57 and back to step #35 in Fig. 11). See col. 4, lines 25-38 and col. 9, lines 21-37.

Regarding claim 31, see the analysis of claim 30.

Regarding claim 33, see the analysis of claim 30. Furthermore, Ishii discloses that said calculator calculates a histogram of the widths of said edges (see Figs. 4 & 5; col. 4, lines 25-38 and step #37 in Fig. 11), and obtains, as said evaluation value (step #39 in Fig. 11), a representative value of a region where the frequency is higher than a predetermined value in said histogram (step #43). See col. 9, lines 21-38 and col. 2, lines 46-54, wherein the evaluation value is a representative value of frequency distribution of the edge widths, and the evaluation value is higher than a predetermined threshold THR 2 in the frequency coordinate.

Regarding claim 34, Ishii discloses that the evaluation value includes an edge width corresponding to a center of gravity of said region (an edge width

within a histogram average value; col. 5, lines 2-8) where the frequency is higher than the predetermined value in said histogram (see claim 33).

Regarding claim 35, see the analysis of claim 33.

Regarding claim 37, see the analysis of claim 30 or 33. Additionally, Ishii further discloses that the driving amount is changed according to characteristics of said optical system (i.e., an aperture size, focal length). See Fig. 17; col. 12, lines 30-47, wherein the amount of driving focus lens set in step #180 depends on the aperture size that causes the size of AF area to be changed in step #150.

Regarding claims 38 & 39, see the analysis of claim 37.

Regarding claim 40, see the analysis of claim 33.

Regarding claim 41, Ishii also discloses that the evaluation value includes a statistical value (i.e., mean value) obtained from said histogram (see col. 9, lines 4-11).

Regarding claim 42, see the analysis of claim 34.

Regarding claim 43, see the analysis of claim 37.

Regarding claim 22, Ishii discloses an apparatus (Figs. 1 & 2) for controlling an optical system (taking lens 1) at the time of capturing an image as digital data (through A/D converter), comprising:

a detector (edge detection 5) for detecting edges in an image (Figs. 1 & 2 and col. 4, lines 25-38);

a noise eliminating part (16, 17 & 8) for eliminating noise components derived from noises from said edges (col. 5, lines 39-50);

a calculator (combined circuits 5-11) for calculating an evaluation value indicative of the degree of achieving focus from the edges from which the noise components have been eliminated (col. 5, lines 39-50; col. 6, lines 3-68 and col. 9, lines 1-68);

a controller (micro-computer 8) for driving said optical system on the basis of said evaluation value (Figs. 10 & 11; col. 9, lines 1-68).

Regarding claim 24, it is clear in Ishii that the evaluation value is calculated on the basis of a histogram of widths of the edges from which the noise components have been eliminated (see col. 5, lines 1-13, 44-50 and col. 6, lines 3-68).

Regarding claim 25, it is also clear that the evaluation value includes a statistical value (i.e., mean value) obtained from said histogram (see col. 9, lines 4-11).

Regarding claim 26, Ishii discloses said noise component is eliminated by extracting a region where an edge width falls within a predetermined range from the histogram which has not been subjected to noise component elimination yet (see col. 5, lines 44-50).

Regarding claim 27, Ishii also discloses the evaluation value including an edge width corresponding to a center of gravity of said histogram already subjected to noise component elimination (see Ishii, col. 5, lines 2-8, wherein a center of gravity of the histogram is represented by an average value y obtained from the histogram).

Regarding claim 28, see the analyses of claim 22.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-21, 29, 32, 36 & 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al (US 5,225,940) in view of Ohta et al (US 6,493,027 B2).

Regarding claim 1, Ishii discloses an apparatus controlling an optical system (taking lens 1) at the time of capturing images as digital data (Fig. 1; col. 4, lines 14-38) comprising:

an instructing part (i.e., user interface) for instructing preparation for image capturing (col. 12, lines 42-47);

a calculator (combined circuits 5-11; Figs. 1 & 2) for detecting edges in an image in response to an instruction from said instructing part and calculating an evaluation value indicative of the degree of achieving focus from said edges (see Figs. 5, 10 & 11; col. 2, lines 45-53; col. 4, lines 25-39 and col. 9, lines 1-29);

a controller (micro-computer 8) for driving said optical system while changing a driving speed on the basis of said evaluation value (see Fig. 11, step #63 in which the driving speed is changed by reducing speed).

Ishii does not explicitly disclose that the captured digital image is a still image. As taught by Ohta, a digital video camera is capable to capture both moving images and still images (see abstract; col. 2, lines 24-33). According to Ohta, when the camera is switched to digital still mode (SV mode) from a moving mode (MV mode), autofocus control is executed in response to half-pushed trigger button (see Ohta; Fig. 15, steps S44 and S47; col. 8, lines 51-62 and col. 11, lines 12-15). Such an implementation is to smoothly switch from moving mode to still mode while maintaining autofocusing function at an optimum state (see col. 2, lines 3-33).

Therefore, it would have been obvious to one of ordinary skill in the art modify the camera apparatus in Ishii to incorporate the teaching of Ishii to enable

a still image mode for capturing still images beside the video mode while maintaining autofocusing function at an optimum state, thereby providing user with choices to capture different kind of images using a single camera.

Regarding claim 2, Ishii discloses that the evaluation value is obtained on the basis of a histogram of widths of said edges (see Ishii, Fig. 2, col. 2, lines 45-53 and col. 4, lines 25-38).

Regarding claim 3, it is clear in Ishii that the evaluation value includes a statistical value (i.e., mean value) obtained from said histogram (see Ishii, col. 9, lines 4-11).

Regarding claim 4, Ishii also discloses the evaluation value including an edge width corresponding to a center of gravity of said histogram (see Ishii, col. 5, lines 2-8, wherein a center of gravity of the histogram is represented by an average value y obtained from the histogram).

Regarding claim 5, Ishii further discloses that the evaluation value includes the number of said edges (see Figs. 1 & 2 and steps #55 & #59 in Fig. 11 and col. 4, lines 25-38).

Regarding claim 6, it is also clear in Ishii that the controller compares said evaluation value with a threshold value and changes said driving speed in

accordance with a comparison result (see steps #17 & #21 in Fig. 10 and steps #61 & #63 in Fig. 11).

Regarding claim 7, Ishii further discloses that said controller compares said evaluation value with a threshold value and, after said optical system is driven in accordance with a comparison result (step #63), said evaluation value is calculated again (via loop back at step #65 when previous mode = large amount of defocus).

Regarding claim 8, see the analysis of claim 1.

Regarding claim 9, see the analysis of claim 1. Furthermore, Ishii discloses that the auto-focusing control flowchart shown in Figs. 10-12 is implemented by a program (see col. 9, lines 52-53) which is inherent stored in the camera in order for the apparatus to function as disclosed.

Regarding claim 10, see the analysis of claim 1. Ishii further discloses a second calculator (details shown in Fig. 9) for calculating contrast of said image and obtaining a second evaluation value indicative of the degree of achieving focus from said contrast (see Ishii, col. 2, line 54 – col. 3, line 4 and col. 8, lines 50-60), and a controller (micro-computer 8) for driving said optical system on the basis of said first and second evaluation values in response to an instruction of said preparation for image capturing, wherein said controller determines a driving

direction of said optical system by using said second evaluation value and calculates a driving amount of said optical system by using said first evaluation value (see col. 2, line 46 – col. 3, line 4; col. 7, lines 45-60 and col. 10, lines 46-60).

Regarding claim 11, as shown by Ishii in Figs. 10 & 11 and col. 10, lines 28-60, said controller calculates said second evaluation value in first arrangement (i.e. a lens position where the lens is out of focus by a large amount at steps #13 to #17; note that the contrast calculation steps replace histogram steps) and second arrangement of said optical system (i.e., a lens position where the lens is substantially in-focus at step #69) to determine said driving direction (steps #29, #31 and #57) such that a degree of achieving focus increases along said driving direction between said first and second arrangement of said optical system.

Regarding claim 12, see the analyses of claims 1 & 11, wherein the driving amount between first and second arrangements is determined on the basis of the first evaluation value (obtained from histogram of edge widths) in the first arrangement (out of focus in normal mode, Figs. 10 & 11, steps #21 & #63, col. 2, lines 46-53 and col. 9, line 1 – col. 10, line 60).

Regarding claims 13 & 14, see the analyses of claims 2 & 4, respectively.

Regarding claim 15, see the analysis of claim 10.

Regarding claim 16, see the analyses of claims 9 & 10.

Regarding claim 17, see the analysis of claim 1. Additionally, Ishii also discloses the controller (8) for determining a driving direction of said optical system (steps #29, #31 and #57 in Figs. 10 & 11) and driving the optical system on the basis of said evaluation value (steps #21 and #63 in Figs. 10 & 11). See Ishii, col. 9, lines 1-67.

Regarding claim 18, as shown in Figs. 10 & 11 in Ishii, said controller calculates said evaluation value in first arrangement (i.e. a lens position where the lens is out of focus at steps #11 to #17) and second arrangement of said optical system (i.e., a lens position where the lens is substantially in-focus at step #69) to determine said driving direction (steps #29, #31 and #57) such that a degree of achieving focus increases along said driving direction between said first and second arrangement of said optical system.

Regarding claim 19, it is clear in step #63 in Fig. 11 of Ishii that the driving amount between said first and second arrangement is determined on the basis of said evaluation value in said first arrangement. Also see Fig. 5 of Ishii, col. 6, lines 33-68 for amount of driving of focus lens from out-of focus position to in-focus position.

Regarding claim 20, see the analyses of claims 1 & 17.

Regarding claim 21, see the analyses of claims 9 & 17.

Regarding claim 29, see the analyses of claims 22, 1 and 9, wherein a still image mode is taught Ohta as analyzed in claim 1.

Regarding claim 32, see the analysis of claims 30, 1 and 9, wherein a still image mode is taught Ohta as analyzed in claim 1.

Regarding claim 36, see the analysis of claims 33, 1 and 9, wherein a still image mode is taught Ohta as analyzed in claim 1.

Regarding claim 44, see the analysis of claims 37, 1 and 9, wherein a still image mode is taught Ohta as analyzed in claim 1.

5. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al (US 5,225,940) in view of Fiete et al (US 6,023,056).

Regarding claim 23, Although Ishii teaches a noise eliminator for eliminating noises from the edges, Ishii does not explicitly teach that the noise component includes edges having an edge width of one pixel. However, Fiete

teaches that noises having an edge width of one pixel (44; Fig. 8) are removed from a plot so that the best focus of the imaging system is determined (see Fiete, col. 4, lines 63-67 and col. 5, lines 12-17).

Therefore, it would have been obvious to one of ordinary skill in the art to configure the imaging apparatus in Ishii to detect and eliminate noise component including edges having an edge width of one pixel so that the best focus would be determined without influence from the noise component.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (571) 272-7371. The examiner can normally be reached on Monday - Thursday, 7:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NT.

DAVID OMETZ
SUPERVISORY PATENT EXAMINER